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=> s lactic acid/rn
L1            0 LACTIC ACID/RN

=> s lactic acid/cn
L2            1 LACTIC ACID/CN

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L2   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2005 ACS on STN
RN   50-21-5  REGISTRY
ED   Entered STN:  16 Nov 1984
CN   Propanoic acid, 2-hydroxy- (9CI)  (CA INDEX NAME)
OTHER CA INDEX NAMES:
CN   Lactic acid (7CI, 8CI)
OTHER NAMES:
CN   (±)-Lactic acid
CN   α-Hydroxypropanoic acid
CN   α-Hydroxypropionic acid
CN   2-Hydroxy-2-methylacetic acid
CN   2-Hydroxypropanoic acid
CN   2-Hydroxypropionic acid
CN   Biolac
CN   Chem-Cast
CN   DL-Lactic acid
CN   dl-Lactic acid
CN   E 270
CN   Milk acid
CN   NSC 367919
CN   Purac FCC 80
CN   Purac FCC 88
CN   Tonsillosan
AR   849585-22-4
FS   3D CONCORD
DR   152-36-3, 598-82-3
MF   C3 H6 O3
CI   COM
LC   STN Files:   ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS,
       BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN,
       CHEMCATS, CHEMINFORMRX, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DETHERM*,
       DIOGENES, DIPPR*, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT,
       ENCOMPPAT2, GMELIN*, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*,
       MSDS-OHS, NAPRALERT, NIOSHTIC, PATDPASPC, PDLCOM*, PIRA, PROMT, PS,
       RTECS*, SPECINFO, SYNTHLINE, TOXCENTER, TULSA, USAN, USPAT2, USPATFULL,
       VETU, VTB
         (*File contains numerically searchable property data)
     Other Sources:   DSL**, EINECS**, TSCA**
         (**Enter CHEMLIST File for up-to-date regulatory information)
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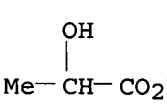

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**PROPERTY DATA AVAILABLE IN THE 'PROP' FORMAT**

          51556 REFERENCES IN FILE CA (1907 TO DATE)
           1900 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
          51621 REFERENCES IN FILE CAPLUS (1907 TO DATE)
              1 REFERENCES IN FILE CAOLD (PRIOR TO 1967)


=> file caplus
COST IN U.S. DOLLARS                          SINCE FILE      TOTAL
                                                 ENTRY    SESSION
FULL ESTIMATED COST                               6.87       7.59
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FILE 'CAPLUS' ENTERED AT 10:19:35 ON 28 JUL 2005
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FILE COVERS 1907 - 28 Jul 2005  VOL 143 ISS 5
FILE LAST UPDATED: 27 Jul 2005  (20050727/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

  This file contains CAS Registry Numbers for easy and accurate
  substance identification.

=> s 50-21-5/prep
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                (50-21-5 (L) PREP/RL)

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         95914 EXCHANGER
         17957 CATION EXCHANGER
                (CATION(W)EXCHANGER)
        203464 ANION
         95914 EXCHANGER
         13886 ANION EXCHANGER
                (ANION(W)EXCHANGER)
L8           4 L6 AND CATION EXCHANGER AND ANION EXCHANGER

=> s l8 and ph
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L9           2 L8 AND PH

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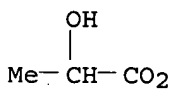
L9 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1980:530609 CAPLUS
DOCUMENT NUMBER: 93:130609
TITLE: Lactic acid
INVENTOR(S): Vozlinskii, M. M.; Sileva, M. N.; Bulenkov, G. I.; Strakhova, G. D.
PATENT ASSIGNEE(S): All-Union Scientific-Research Institute of Microbiological Plant-Protecting Ag, USSR
SOURCE: U.S.S.R. From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1980, (19), 91.
CODEN: URXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Russian
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SU 735590	T	19800525	SU 1977-2543572	19771115
PRIORITY APPLN. INFO.:			SU 1977-2543572 A	19771115

AB Lactic acid [50-21-5] was obtained by culturing Streptococcus lactis, separating the antibiotic nisin, treating the residual liquid with alkali up to **pH** 9.5-9.8, and filtering the residue. The solution was purified by passing 1st through a **cation exchanger** (sulfopolystyrene resin in H+ form) and then an **anion exchanger** (condensed type having secondary, tertiary, and quaternary aliphatic amino groups), with subsequent desorption with H2SO4.

IT **50-21-5P**, biological studies
RL: **PUR (Purification or recovery)**; **PREP (Preparation)**
(purification of, from Streptococcus lactis)

RN 50-21-5 CAPLUS
CN Propanoic acid, 2-hydroxy- (9CI) (CA INDEX NAME)

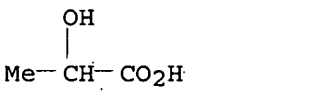


L9 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1969:88951 CAPLUS
DOCUMENT NUMBER: 70:88951
TITLE: Identification of carboxyl groups in cellulose after aging as alkali cellulose
AUTHOR(S): Samuelson, Olof; Thede, Lars
CORPORATE SOURCE: Chalmers Tek. Hogsk., Goteborg, Swed.
SOURCE: Tappi (1969), 52(1), 99-104
CODEN: TAPPAP; ISSN: 0039-8241
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The monoprotic acids present in hydrolyzates from alkali cellulose prepared from cotton were determined by column and paper chromatog. Purified cotton was cut into 20-mm. lengths, mercerized for 1 hr. at 25° in 18% NaOH, and the resulting alkali cellulose was pressed to 33% cellulose content and aged in an autoclave at 33° and 2 atmospheric for 200 hrs. Traces of alkali were removed by immersion in 0.5% HOAc for 1 hr. and the sample was dried to yield aged alkali cellulose with 5.1 meq./100 g. CO2H content. A 43% HCl solution (5 l.) was used to hydrolyze 250 g. alkali cellulose for 6 hrs. The HCl was evaporated in vacuo at 35° and the concentrated hydrolyzate was diluted to 1.8 l. and boiled for 5 hrs. The hydrolyzate containing 900 meq. HCl was passed through an ion-exchange column containing Dowex 2-X8 **anion exchanger** in the acetate form and the collected eluent contained the sugars and lactones of the organic acids. The monoprotic acids were eluted with 12 l. 5M HOAc, although the fractions were titrated with NaOH to **pH** 8 and maintained at this **pH** for 4 hrs. to saponify the lactones. The sugar-saponified lactone fraction was passed through a column and the collected effluent was concentrated in vacuo, and the combined fractions were then eluted with 250 ml. 0.5M

NaOAc and isolated by passing through a H **cation exchanger** to yield 820 mg. acid fraction. The organic acids were separated on a preparative anion-exchange column by elution with 0.5M HOAc and 0.5M NaOAc. Paper chromatog. and gas chromatog.-mass spectrometry were also used to determine the acids present. Sugars present were determined by partition chromatog. on an **anion exchanger** in the sulfate form. Large amts. of arabinic, erythronic, mannonic, and glycolic acid end groups were present. Minor amts. of gluconic, ribonic, and glyceric acids were present, but no glucometasaccharinic units were determined The major reaction during aging is oxidation at the C-2 or C-3 position followed by β-alkoxy elimination and formation of the glucose end group in the cellulose chain, which is further attacked to yield aldonic acid end groups.

IT **50-21-5P**, preparation
RL: **PREP (Preparation)**
(from hydrolyzates of aged alkali cellulose)
RN 50-21-5 CAPLUS
CN Propanoic acid, 2-hydroxy- (9CI) (CA INDEX NAME)



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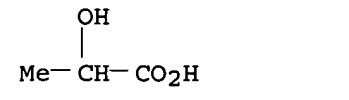
L8 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1996:50600 CAPLUS
DOCUMENT NUMBER: 124:85057
TITLE: A method for preparing an organic acid or its salt
INVENTOR(S): Hammond, Roger; Hannikainen, Jaakko; Viljava, Tapio
PATENT ASSIGNEE(S): Cultor Oy, Finland
SOURCE: PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9532301	A1	19951130	WO 1995-FI277	19950522
W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT				
RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
FI 9402403	A	19951125	FI 1994-2403	19940524
AU 9525668	A1	19951218	AU 1995-25668	19950522
PRIORITY APPLN. INFO.:			FI 1994-2403 A	19940524
			WO 1995-FI277 W	19950522

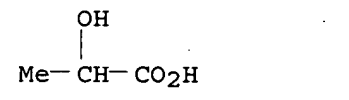
AB The invention relates to a method for preparing an organic acid or its salt by a continuous process. In accordance with the invention, a feed solution is continuously passed into a bioreactor containing microorganisms bound to a solid carrier, the acidic solution withdrawn from the bioreactor is passed through a column on an **anion exchanger** regenerated with alkali metal hydroxide, the feed solution withdrawn from the anion exchange column is recycled to the bioreactor, and at suitable intervals, the feed solution is displaced by water and the anion exchange resin is regenerated with alkali metal hydroxide to recover the acid as an alkali salt. If acid is the desired end product, the alkali metal salt solution is passed through a column of a **cation exchanger** in H+-form to yield an acid.

IT **50-21-5P**, Lactic acid, preparation

RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); **PREP (Preparation)**
(continuous fermentative production of an organic acid or its salt using ion exchangers)
RN 50-21-5 CAPLUS
CN Propanoic acid, 2-hydroxy- (9CI) (CA INDEX NAME)



L8 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1984:474731 CAPLUS
DOCUMENT NUMBER: 101:74731
TITLE: Purification of industrial lactic acid solutions with ion exchangers
AUTHOR(S): Zeleneva, N. A.; Shamritskaya, I. P.; Ivanova, E. V.
CORPORATE SOURCE: Voronezh. Tekhnol. Inst., Voronezh, USSR
SOURCE: Teoriya i Praktika Sorbtsionnykh Protsessov (1983), 16, 114-17
CODEN: TPRSBE; ISSN: 0131-7008
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB The removal of Na, Ca, K, and Fe from lactic acid (I) [50-21-5] solns. is performed best on the **cation exchanger** KU 2 [11098-94-5]. On this exchanger the order of ion retention is: Ca2+ > K+ > Na+ > Fe3+. The appearance of Fe3+ in the eluate indicates that KU 2 is spent. The removal of Cl- and SO42- from I solution is conducted best on AV 17-2P [37380-51-1] **anion exchanger**, initially in the OH- form. The introduction of I converts AV 17-2P to the lactate form. Since I anion is retained more strongly than Cl- or SO42-, the latter anions can be removed.
IT **50-21-5P**, preparation
RL: **PUR (Purification or recovery)**; **PREP (Preparation)**
(purification of, by ion exchange)
RN 50-21-5 CAPLUS
CN Propanoic acid, 2-hydroxy- (9CI) (CA INDEX NAME)



L8 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1980:530609 CAPLUS
DOCUMENT NUMBER: 93:130609
TITLE: Lactic acid
INVENTOR(S): Vozlinskii, M. M.; Sileva, M. N.; Bulenkov, G. I.; Strakhova, G. D.
PATENT ASSIGNEE(S): All-Union Scientific-Research Institute of Microbiological Plant-Protecting Ag, USSR
SOURCE: U.S.S.R. From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1980, (19), 91.
CODEN: URXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Russian
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

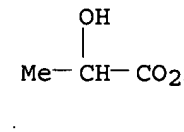
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SU 735590	T	19800525	SU 1977-2543572	19771115
PRIORITY APPLN. INFO.:			SU 1977-2543572 A	19771115

AB Lactic acid [50-21-5] was obtained by culturing Streptococcus lactis,

separating the antibiotic nisin, treating the residual liquid with alkali up to pH 9.5-9.8, and filtering the residue. The solution was purified by passing 1st through a **cation exchanger** (sulfopolystyrene resin in H+ form) and then an **anion exchanger** (condensed type having secondary, tertiary, and quaternary aliphatic amino groups), with subsequent desorption with H2SO4.

IT **50-21-5P**, biological studies
RL: **PUR (Purification or recovery)**; **PREP (Preparation)**
(purification of, from Streptococcus lactis)

RN 50-21-5 CAPLUS
CN Propanoic acid, 2-hydroxy- (9CI) (CA INDEX NAME)



L8 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1969:88951 CAPLUS
DOCUMENT NUMBER: 70:88951
TITLE: Identification of carboxyl groups in cellulose after aging as alkali cellulose
AUTHOR(S): Samuelson, Olof; Thede, Lars
CORPORATE SOURCE: Chalmers Tek. Hogsk., Goteborg, Swed.
SOURCE: Tappi (1969), 52(1), 99-104
CODEN: TAPPAP; ISSN: 0039-8241
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The monoprotic acids present in hydrolyzates from alkali cellulose prepared from cotton were determined by column and paper chromatog. Purified cotton was cut into 20-mm. lengths, mercerized for 1 hr. at 25° in 18% NaOH, and the resulting alkali cellulose was pressed to 33% cellulose content and aged in an autoclave at 33° and 2 atmospheric for 200 hrs. Traces of alkali were removed by immersion in 0.5% HOAc for 1 hr. and the sample was dried to yield aged alkali cellulose with 5.1 meq./100 g. CO2H content. A 43% HCl solution (5 l.) was used to hydrolyze 250 g. alkali cellulose for 6 hrs. The HCl was evaporated in vacuo at 35° and the concentrated hydrolyzate was diluted to 1.8 l. and boiled for 5 hrs. The hydrolyzate containing 900 meq. HCl was passed through an ion-exchange column containing Dowex 2-X8 **anion exchanger** in the acetate form and the collected eluent contained the sugars and lactones of the organic acids. The monoprotic acids were eluted with 12 l. 5M HOAc, although the fractions were titrated with NaOH to pH 8 and maintained at this pH for 4 hrs. to saponify the lactones. The sugar-saponified lactone fraction was passed through a column and the collected effluent was concentrated in vacuo, and the combined fractions were then eluted with 250 ml. 0.5M NaOAc and isolated by passing through a H **cation exchanger** to yield 820 mg. acid fraction. The organic acids were separated on a preparative anion-exchange column by elution with 0.5M HOAc and 0.5M NaOAc. Paper chromatog. and gas chromatog.-mass spectrometry were also used to determine the acids present. Sugars present were determined by partition chromatog. on an **anion exchanger** in the sulfate form. Large amts. of arabinic, erythronic, mannonic, and glycolic acid end groups were present. Minor amts. of gluconic, ribonic, and glyceric acids were present, but no glucometasaccharinic units were determined The major reaction during aging is oxidation at the C-2 or C-3 position followed by β-alkoxy elimination and formation of the glucose end group in the cellulose chain, which is further attacked to yield aldonic acid end groups.

IT **50-21-5P**, preparation
RL: **PREP (Preparation)**
(from hydrolyzates of aged alkali cellulose)

RN 50-21-5 CAPLUS
CN Propanoic acid, 2-hydroxy- (9CI) (CA INDEX NAME)